

SVKM's
D. J. Sanghvi College of Engineering

**Program: B.Tech in Production
Engineering**

Academic Year: 2022

Duration: 3 hours

Date: 06.01.2023

Time: 10:30 am to 01:30 pm

Subject: Product Design and Development (Semester VII)

Marks: 75

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover page of the Answer Book, which is provided for their use.

- (1) This question paper contains 02 pages.
- (2) **All Questions are Compulsory.**
- (3) All questions carry equal marks.
- (4) **Answer to each new question is to be started on a fresh page.**
- (5) **Figures in the brackets on the right indicate full marks.**
- (6) **Assume suitable data wherever required but justify it.**
- (7) Draw the neat, labelled diagrams, wherever necessary.

Question No.		Max. Marks
Q1 (a)	Explain the main differences between DFM and DFA	[06]
	OR	
	Explain various tolerances to be considered as guidelines for die forgings made in two-part die sets.	[06]
Q1 (b)	(i) Explain product mix decisions.	[04]
	(ii) Explain product architecture.	[05]
	OR	
	(ii) Discuss the reasons for new product failure.	[05]
Q2 (a)	What is a FAST diagram? Construct a FAST diagram for an electric iron.	[10]
Q2 (b)	Discuss various applications of product life cycle management method.	[05]
	OR	
	Discuss advantages of concurrent engineering approach for product design.	[05]
Q3 (a)	Discuss any one case study supporting the of design and development of invention.	[07]
	OR	
	Discuss various phases in product development and design.	[07]
Q3 (b)	Explain DFMA guidelines associated with design for hinge and snap fit assemblies.	[08]
	OR	
	(i) Explain the benefits of sustainable design.	[04]
	(ii) Write short note on design for safety.	[04]
Q4 (a)	(i) Write short note on robust design.	[05]
	(ii) Discuss advantages of rapid prototyping for product development.	[05]
Q4 (b)	Discuss the role of aesthetics in product design process.	[05]

	OR Discuss the main ergonomic considerations in a good product design.	[05]
Q5	Solve any three: (a) What is value analysis test? Explain its role in product design and development. (b) Explain the function of anthropometry in product design. (c) Compare design by innovation and design by evolution. (d) Discuss practical ideas for material saving in product design.	[05] [05] [05] [05]

